

Invoice**Moffatt & Nichol****3780 Kilroy Airport Way, Suite 750****Long Beach, CA 90806****Phone: 562-590-6500**

February 12, 2015

Project No: 6664-02

Invoice No: 000000708839

Robert Law

K&L Representing the Cooperating Parties Group

186 Center Street, Suite 290

Clinton, NJ 08809

Project 6664-02 Lower Passaic River/Newark Bay Modeling

Professional Services from December 28, 2014 to January 31, 2015**LPR/NB Modeling Program TOM8**

Task 01 Coordination and Meetings

Professional Personnel

	Hours	Rate	Amount
Senior Engineer/Scientist			
Canizares, Rafael	5.00	195.00	975.00
Engineer/Scientist II			
Mathew, Rooni	3.00	172.00	516.00
Totals	8.00		1,491.00
Total Labor			1,491.00
Total this Task			\$1,491.00

Task 02 Data Analysis and Monitoring

Professional Personnel

	Hours	Rate	Amount
Senior Engineer/Scientist			
Canizares, Rafael	8.00	195.00	1,560.00
Staff Engineer/Scientist			
Manian, Dinesh	32.00	119.00	3,808.00
Totals	40.00		5,368.00
Total Labor			5,368.00
Total this Task			\$5,368.00

Task 04 LPR/NB Hydrodynamic Model

Professional Personnel

	Hours	Rate	Amount
Senior Engineer/Scientist			
Canizares, Rafael	14.00	195.00	2,730.00
Engineer/Scientist II			
Mathew, Rooni	6.50	172.00	1,118.00
Staff Engineer/Scientist			
Manian, Dinesh	44.00	119.00	5,236.00
Totals	64.50		9,084.00
Total Labor			9,084.00
Total this Task			\$9,084.00

Task 05 LPR/NB Sediment Transport Model

Professional Personnel

	Hours	Rate	Amount	
Engineer/Scientist II				
Mathew, Rooni	55.50	172.00	9,546.00	
Totals	55.50		9,546.00	
Total Labor				9,546.00
		Total this Task		\$9,546.00

Task 07 LPR/NB Contaminant Fate & Transport Mdel

Professional Personnel

	Hours	Rate	Amount	
Engineer/Scientist II				
Mathew, Rooni	40.00	172.00	6,880.00	
Totals	40.00		6,880.00	
Total Labor				6,880.00
		Total this Task		\$6,880.00
		Total this Phase		\$32,369.00

Reimbursable Expenses

Postage & Delivery

1/9/2015	Federal Express Corp	INV 288244976 TID	13.64	
1/9/2015	Federal Express Corp	INV 288244976 TID	13.64	
1/12/2015	Federal Express Corp	INV 289027319 TID	13.64	
	Total Reimbursables		40.92	40.92
	Total Reimbursable Expenses			\$40.92
		Total this Invoice		\$32,409.92

ACH Payment Remittance Information Bank Account Name: Moffatt & Nichol Bank Number: 4159349729 Routing: 121000248
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Thursday, February 12, 2015

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Invoice 000000708839 Dated 2/12/2015

Project	6664-02	Lower Passaic River/Newark Bay Modeling
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LPR/NB Modeling	Program	TOM8
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Task	01	Coordination and Meetings
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Professional Personnel

			Hours	Rate	Amount
Senior Engineer/Scientist					
1548	Canizares, Rafael	1/7/2015	2.00	195.00	390.00
1548	Canizares, Rafael	1/19/2015	2.00	195.00	390.00
1548	Canizares, Rafael	1/22/2015	1.00	195.00	195.00
Engineer/Scientist II					
2219	Mathew, Rooni	1/6/2015	1.00	172.00	172.00
2219	Mathew, Rooni	1/7/2015	2.00	172.00	344.00
Totals			8.00		1,491.00
Total Labor					1,491.00

Total this Task	\$1,491.00
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Task	02	Data Analysis and Monitoring
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Professional Personnel

			Hours	Rate	Amount
Senior Engineer/Scientist					
1548	Canizares, Rafael	1/15/2015	4.00	195.00	780.00
1548	Canizares, Rafael	1/16/2015	4.00	195.00	780.00
Staff Engineer/Scientist					
2301	Manian, Dinesh	12/31/2014	8.00	119.00	952.00
2301	Manian, Dinesh	1/2/2015	8.00	119.00	952.00
2301	Manian, Dinesh	1/8/2015	8.00	119.00	952.00
2301	Manian, Dinesh	1/9/2015	8.00	119.00	952.00
Totals			40.00		5,368.00
Total Labor					5,368.00

Total this Task	\$5,368.00
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Task	04	LPR/NB Hydrodynamic Model
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Professional Personnel

			Hours	Rate	Amount
Senior Engineer/Scientist					
1548	Canizares, Rafael	1/20/2015	3.00	195.00	585.00
1548	Canizares, Rafael	1/21/2015	1.00	195.00	195.00
1548	Canizares, Rafael	1/22/2015	2.00	195.00	390.00
1548	Canizares, Rafael	1/23/2015	2.00	195.00	390.00
1548	Canizares, Rafael	1/27/2015	2.00	195.00	390.00

Project	6664-02	Lower Passaic River/Newark Bay Modeling			Invoice	0000007086
1548	Canizares, Rafael	1/28/2015	2.00	195.00	390.00	
1548	Canizares, Rafael	1/29/2015	1.00	195.00	195.00	
1548	Canizares, Rafael	1/30/2015	1.00	195.00	195.00	
Engineer/Scientist II						
2219	Mathew, Rooni	1/19/2015	3.00	172.00	516.00	
2219	Mathew, Rooni	1/20/2015	2.50	172.00	430.00	
2219	Mathew, Rooni	1/21/2015	.50	172.00	86.00	
2219	Mathew, Rooni	1/22/2015	.50	172.00	86.00	
Staff Engineer/Scientist						
2301	Manian, Dinesh	12/29/2014	8.00	119.00	952.00	
2301	Manian, Dinesh	12/30/2014	8.00	119.00	952.00	
2301	Manian, Dinesh	1/5/2015	8.00	119.00	952.00	
2301	Manian, Dinesh	1/6/2015	8.00	119.00	952.00	
2301	Manian, Dinesh	1/7/2015	8.00	119.00	952.00	
2301	Manian, Dinesh	1/19/2015	4.00	119.00	476.00	
Totals			64.50		9,084.00	
Total Labor						9,084.00
					Total this Task	\$9,084.00

Task	05	LPR/NB Sediment Transport Model			
Professional Personnel					
			Hours	Rate	Amount
Engineer/Scientist II					
2219	Mathew, Rooni	12/29/2014	5.00	172.00	860.00
2219	Mathew, Rooni	12/31/2014	5.00	172.00	860.00
2219	Mathew, Rooni	1/5/2015	5.00	172.00	860.00
2219	Mathew, Rooni	1/6/2015	1.00	172.00	172.00
2219	Mathew, Rooni	1/8/2015	3.00	172.00	516.00
2219	Mathew, Rooni	1/9/2015	3.00	172.00	516.00
2219	Mathew, Rooni	1/12/2015	1.00	172.00	172.00
2219	Mathew, Rooni	1/15/2015	4.00	172.00	688.00
2219	Mathew, Rooni	1/16/2015	4.00	172.00	688.00
2219	Mathew, Rooni	1/19/2015	3.00	172.00	516.00
2219	Mathew, Rooni	1/20/2015	1.00	172.00	172.00
2219	Mathew, Rooni	1/21/2015	5.50	172.00	946.00
2219	Mathew, Rooni	1/22/2015	7.50	172.00	1,290.00
2219	Mathew, Rooni	1/26/2015	4.00	172.00	688.00
2219	Mathew, Rooni	1/27/2015	3.50	172.00	602.00
Totals			55.50		9,546.00
Total Labor					9,546.00
				Total this Task	\$9,546.00

Task	07	LPR/NB Contaminant Fate & Transport Mdel			
Professional Personnel					
			Hours	Rate	Amount
Engineer/Scientist II					
2219	Mathew, Rooni	12/29/2014	3.00	172.00	516.00
2219	Mathew, Rooni	12/31/2014	1.00	172.00	172.00
2219	Mathew, Rooni	1/5/2015	3.00	172.00	516.00
2219	Mathew, Rooni	1/6/2015	3.00	172.00	516.00
2219	Mathew, Rooni	1/8/2015	2.00	172.00	344.00
2219	Mathew, Rooni	1/9/2015	2.00	172.00	344.00
2219	Mathew, Rooni	1/19/2015	2.00	172.00	344.00
2219	Mathew, Rooni	1/20/2015	3.50	172.00	602.00

Project	6664-02	Lower Passaic River/Newark Bay Modeling			Invoice	0000007086
2219	Mathew, Rooni	1/26/2015	4.00	172.00	688.00	
2219	Mathew, Rooni	1/27/2015	4.50	172.00	774.00	
2219	Mathew, Rooni	1/28/2015	5.50	172.00	946.00	
2219	Mathew, Rooni	1/29/2015	2.00	172.00	344.00	
2219	Mathew, Rooni	1/30/2015	4.50	172.00	774.00	
Totals			40.00		6,880.00	
Total Labor						6,880.00
				Total this Task		\$6,880.00
				Total this Phase		\$32,369.00

Reimbursable Expenses

Postage & Delivery						
AP	000000212312	1/9/2015	Federal Express Corp / INV 288244976 TID		13.64	
AP	000000212316	1/9/2015	Federal Express Corp / INV 288244976 TID		13.64	
AP	000000212556	1/12/2015	Federal Express Corp / INV 289027319 TID		13.64	
			Total Reimbursables		40.92	40.92
			Total Reimbursable Expenses			\$40.92
			Total this Project			\$32,409.92
			Total this Report			\$32,409.92



104 West 40th Street
14th floor
New York, NY 10018

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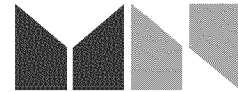
Detailed Description of work done by M&N personnel associated to the LPR/NB Modeling Program Task Order Memoranda 8 - Scope of Work for the period 12/28/2014 to 01/31/2015 M&N Project No. 6664

Hydrodynamics Principal Investigator - Rafael Cañizares.

Task 1 – Project Management	<ul style="list-style-type: none">• Internal coordination with Deltares and M&N• Calls and Coordination with Project Coordinator• Coordination with Project Coordinator and AQEA including calls for modeling update• Internal discussion on simulations to be carried.
Task 2 – Data Analysis	<ul style="list-style-type: none">• Report development and review Bathymetric Analysis write up
Task 4 – LPR/NB Hydrodynamic Modeling	<ul style="list-style-type: none">• Hydrodynamic model report – review developments of HD model report by Dinesh Manian

Rooni Mathew.

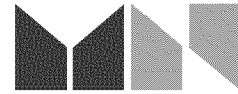
Task 1 – Project Management	<ul style="list-style-type: none">• Summarize EPA ST model comments and response to comments RTC status, including questions to March 2014 presentation• Call-in to TC meeting
Task 4 – LPR/NB Hydrodynamic Modeling	<ul style="list-style-type: none">• Restart FS runs after building power-down, hard-disk space management• Launch hot-started Alt4 run• Debug/restart crashed FS runs
Task 5 – LPR/NB Sediment Transport Modeling	<ul style="list-style-type: none">• Review FS run progress, develop ST model report outline• Process/review FS ST test runs, devel. response to EPA comments, devel ST report outline• Process/review FS ST runs, develop analysis for responses to EPA ST memo comments,• Review longterm infill run performance, revise Dundee Dam boundary conditions for historical loads• Debug/restart crashed variable D50 sens• Develop response to comments for EPA comments on ST model• Review/reproduce DD OBS binning procedure previously



	<p>done, develop ST model report</p> <ul style="list-style-type: none"> • Develop ST final report, review FS runs performance with annual bathy change maps • Debug/restart crashed FS runs • Review/QA-QC FS and FS sensitivity runs results • Debug/restart Alt 4 run for native cap in target remedy cells, Alt 3 sensitivity with bed resetting for incorrect bathy
Task 7 – LPR/NB Contaminate Fate and Transport Modeling	<ul style="list-style-type: none"> • Review FS CFT runs performance, launch Alt2 AOC/CFT • Review FS run progress • Process/review FS CFT test runs, correct Alt2 remediation inputs • Progress call with AQEA, process/review FS CFT test runs • Process/review FS CFT test runs, debug CFT run crashes/instabilities • Conference call with AQEA to discuss CFT results, review ST/CFT performance, respond to AQEA requests • Respond to AQEA questions, launch FS AOC/CFT runs • Revise runscripts for latest AQEA input/run setups, launch AOC/CFT FS runs, debug AOC and CFT crashes • Post-process FS runs outputs for AQEA • Respond to AQEA questions, debug Alt2 run • Debug/restart Alt 2/3 no sand cap sensitivity AOC stability issues, run w smaller timesteps, respond to AQEA questions, develop FS text • Respond to AQEA questions, review Alt 3 sensitivity AOC stability issue • Respond to AQEA questions, develop FS write-up, post-process output for AQEA, review Alt 3 sensitivity AOC crash

Dinesh Manian

Task 2 – Data Analysis	<ul style="list-style-type: none"> • HD modeling report addendum: model validation with PWCM and CWCM data • HD modeling report addendum: bathymetry update • Processing long-term elevation change time-series in latest calibration and projection runs • Long-term elevation change time-series; Comparison of change in bed composition in model with data
Task 4 – LPR/NB Hydrodynamic Modeling	<ul style="list-style-type: none"> • HD modeling report addendum: high-resolution model • HD modeling report addendum: high-resolution model and RM10.9 model desc • HD modeling report: ETM analysis using new model result • HD modeling report : Model-data comparisons with PWCM data



	<ul style="list-style-type: none">• HD modeling report : Model-data comparisons with PWCM data• HD model validation
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Tracking ID no.	772356975815
Invoice no.	2-890-27319
Account no.	1903-9632-0
Ship date	12/22/2014
Invoice date	12/26/2014
Due date	01/10/2015
Tracking ID Balance due	\$0.00
Status	Closed

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Shipment Details

Ship date	12/22/2014
Payment type	Shipper
Service type	FedEx Priority Overnight
Zone	02
Package type	FedEx Box
Actual weight	1.00 lbs
Rated weight	2.00 lbs
Pieces	1
Meter No.	5026004
Declared value	\$0.00

Original Reference

Customer reference no.	6664-02 K, xy
Department no.	
Reference #2	
Reference #3	

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Delivery date	12/23/2014 11:31
Service area code	A2
Signed by	N.GLASER

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Recipient Information

Wen Ku
Anchor QEA, LLC
123 TICE BLVD
WOODCLIFF LAKE NJ 07677
US

Charges

Transportation Charge	24.75
Fuel Surcharge	0.77
Weekday Delivery	0.00
Discount	-11.14
Earned Discount	-0.74
Total charges	\$13.64

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Customer reference no.	
Department no.	
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Reference #3	

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Tracking ID no.	772172851805
Invoice no.	2-882-44976
Account no.	1903-9632-0
Ship date	12/10/2014
Invoice date	12/19/2014
Due date	01/03/2015
Tracking ID Balance due	\$0.00
Status	Closed

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Shipment Details

Ship date	12/10/2014
Payment type	Shipper
Service type	FedEx Priority Overnight
Zone	02
Package type	FedEx Box
Actual weight	1.00 lbs
Rated weight	2.00 lbs
Pieces	1
Meter no.	5026004
Declared value	\$0.00

Original Reference

Customer reference no.	6664-02 K, xy
Department no.	
Reference #2	
Reference #3	

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Delivery date	12/11/2014 10:25
Service area code	A2
Signed by	N.GLASER

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Recipient Information

Wen Ku
Anchor QEA, LLC
123 TICE BLVD
WOODCLIFF LAKE NJ 07677
US

Charges

Transportation Charge	24.75
Fuel Surcharge	0.77
Weekday Delivery	0.00
Discount	-11.14
Earned Discount	-0.74
Total charges	\$13.64

Updated Reference

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Customer reference no.	
Department no.	
Reference #2	
Reference #3	

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Tracking ID no.	772240616210
Invoice no.	2-882-44976
Account no.	1903-9632-0
Ship date	12/15/2014
Invoice date	12/19/2014
Due date	01/03/2015
Tracking ID Balance due	\$0.00
Status	Closed

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Shipment Details

Ship date	12/15/2014
Payment type	Shipper
Service type	FedEx Priority Overnight
Zone	02
Package type	FedEx Box
Weight	2.00 lbs
Pieces	1
Meter no.	5026004
Declared value	\$0.00

Original Reference

Customer reference no.	6664-02 K, xy
Department no.	
Reference #2	
Reference #3	

Proof of Delivery

Delivery date	12/16/2014 10:24
Service area code	A2
Signed by	N.GLASER

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Recipient Information

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US

Charges

Transportation Charge	24.75
Fuel Surcharge	0.77
Weekday Delivery	0.00
Discount	-11.14
Earned Discount	-0.74
Total charges	\$13.64

Updated Reference

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Department no.	
Reference #2	
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